Institut für Stochastik

Einladung zu einem Vortrag in der

AG STOCHASTIK

am Dienstag, 09.12.2025, um 15.45 Uhr.

Prof. Simone Padoan
Bocconi University

spricht über das Thema

Bayesian inference for tail risk extrapolation in time series

Temporal dependence is common in many applications, from financial time series to those in climate science, and it affects the behavior of extremes by inducing clustering. As a result, time series data contain less effective information than independent samples, leading to greater uncertainty in extreme value analysis. In this work, we study the Peaks-Over-Threshold (POT) framework, the most widely used method for modeling and estimating univariate extremes, within (strictly) stationary time series under weak mixing conditions. We propose a Bayesian inferential procedure based on the Generalized Pareto (GP) model, specifically tailored to time series settings, which enables extrapolation of both marginal (pertaining to the stationary distribution) and dynamic (conditional on the past) tail risks. We investigate the theoretical accuracy guarantees of our approach and to do so we derived some global properties of the underlying likelihood that had not been previously analyzed. Extensive simulations and real-data applications demonstrate the good inferential performance and practical relevance of the proposed methodology.

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Die Dozentinnen und Dozenten der Stochastik